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| 10/642,560      | 08/18/2003  | Michael H. Gurin     |                     | 4237             |

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EXAMINER

VIJAYAKUMAR, KALLAMBELLA M

ART UNIT

PAPER NUMBER

1751

DATE MAILED: 01/26/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/642,560

Applicant(s)

GURIN, MICHAEL H.

Examiner

Kallambella Vijayakumar

Art Unit

1751

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 08 November 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 4-9 and 11-23 is/are rejected.
- 7) ☐ Claim(s) 2, 3 and 10 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

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### **DETAILED ACTION**

Applicant's amendment filed 11/08/2005 in response to the Election/Restriction in office action mailed 10/07/2005 is acknowledged, and the restriction requirement is withdrawn over the amendment.

Claims 1-23 as amended are currently pending with the application.

### ***Claim Objections***

Claim 23 objected to because of the following informalities: Claim-23 recites the limitation of "...photon, electron and photon emitters" that should read as "photon, electron and phonon emitters". Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 2-3, 5-11, 14, 16-23 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 2-3 recite the limitation of "The conductive medium" according to claim 1 and claim 2 respectively, Claims 5 and 7 recite the limitation of "The multiple layer" according to claim 4, Claim-6 recites the limitation of "The externally generated fields" according to claim-5, Claims 8 and 9 recite the limitation of "The alternating layers" according to claim-7, Claim-10 recites the limitation of "The functionalized powders" according to claim-3, Claim-11 recites the limitation of "The powder having surface modified nanoscale layer" according to claim-1, Claim-14 recites the limitation of "The powders" according to claim-1, Claims 16-17 recite the limitation of "The non-thermal means" according to claim-15, Claim-18 recites the limitation of "The externally generated fields" according to claim-17, Claim-19 recites the limitation of "the multiple layer composite" according to claim-4, Claim-20 recites the limitation of "The

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products" according to claim-19, Claims 21-22 recite the limitation of "The externally generated fields" according to claim 20 and claim 21 respectively, and Claim-23 recites the limitation of "The products" according to claim-23 in the preamble, while the claims are drawn to a "An enhanced nanocomposite." It is suggested to amend the preamble in the claims to claim "An enhanced nanocomposite of claim (X), wherein the conductive medium....." for the purposes of eliminating vagueness and clarity of the claims.

Claim 7 recites the limitation "matrix" in line-2. There is insufficient antecedent basis for this limitation in the claim. Further, Claim-7 recites the limitation of alternate layers of nanocomposite doped with conductive additives and nanocomposite doped with semiconductor additives, and it is not clear whether there are two different layers with two different dopants or one of the layer with one dopant exists in the matrix.

#### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
  2. Ascertaining the differences between the prior art and the claims at issue.
  3. Resolving the level of ordinary skill in the pertinent art.
  4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
1. Claims 1, 4-6, 11, 14-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ogawa et al (JP 58-103565).

Ogawa et al teach surface coating Ag-Be-Cu Alloy powder by dipping the powder in an organic solvent solution of 1,2,3-benzotriazole, separating the solvent and drying forming a thin film of chelate

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compound over the surface of the alloy powder. The particle size of the Ag-alloy powder was 0.05-10 microns. The surface coated Ag-alloy powder, a thermosetting resin such as xylene resin and solvent such as ethyl carbitol were kneaded to form a paint, the paint applied to a phenolic resin substrate and cured in air forming an electrode and a conductive path (Abstract).

The prior art is silent about the thickness of the chelate coating over the alloy particle surface.

However, the prior art teaches making the composition using the components and the method steps that are similar to that used by the applicants (Specification, Example-1), and the claimed thickness of the thin film of the chelate compound over the alloy surfaces would be obvious.

With regard to claims 4 and 19, the prior art teaches a coated electrode and conductive path.

With regard to the process steps in claims 5-6 and 14-18 and 20-22, the claims are drawn to composition itself.

With regard to claim-11, the prior art teaches the addition of solvent.

The particle size of the alloy further meets the limitation of quantum dots in claim-13.

2. Claims 1, 4-6, 11-12, 14-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Binnis et al (US 3,345,187).

Binnis et al teach precoating titanium dioxide particles having a particle size of 0.15-0.35 micron with oxides followed by triisopropanolamine in alcohol solution to allow retention after milling. Precoated titania was mixed with alkyd resin forming a coating that was applied over a surface forming the film and curing the film by drying. The amount of the surface coating over titania was in the range of 0.5-5% by weight (Col-2, Ln 1-37, 56-73, Col-3, Examples 1 and 2).

Although, the prior art provides the amount of surface film in terms of weight%, it is silent about the thickness of the surface film.

However, the prior art teaches making the composition using the ingredients and the method steps that are similar to that used by the applicants (Specification, Example-1), and the claimed thickness of the surface film in the composition would be obvious because the particle size of the core material and the coating solution are similar to that by the applicants.

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With regard to claims 4 and 19, the prior art teaches a coated electrode and film. The film further meets the limitation of a photovoltaic in claim-23, because of the photovoltaic property of titanium dioxide.

With regard to the process steps in claims 5-6 and 14-18 and 20-22, the claims are drawn to composition itself.

With regard to claims 11-12, the prior art teaches the addition of triisopropanolamine.

The particle size of the alloy further meets the limitation of quantum dots in claim-13.

### ***Allowable Subject Matter***

Claim 2-3 and 10 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: The prior art of record neither teaches nor fairly suggest the conductive medium to be a nanocomposite with a particle size of 1-nm to 1-micron, and the obvious presence of such medium in the prior art could not be established with certainty.

### ***Conclusion***


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kallambella Vijayakumar whose telephone number is 571-272-1324. The examiner can normally be reached on 8-5.30 Mon-Thu, 8-4.30 Alt Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Yogendra Gupta can be reached on 571-272-1316. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KMV  
January 23, 2006.

  
**Mark Kopec**  
**Primary Examiner**